
**Endangered Species Act – Section 7 Consultation
Biological Opinion and Incidental Take Statement**

Agency: National Marine Fisheries Service
Alaska Region Sustainable Fisheries Division

Activities Considered: Authorization of Bering Sea/Aleutian Islands groundfish fisheries based on the Fishery Management Plan for the Bering Sea/Aleutian Islands Groundfish; and

Authorization of Gulf of Alaska groundfish fisheries based on the Fishery Management Plan for Groundfish of the Gulf of Alaska.

Consultation By: National Marine Fisheries Service
Protected Resources Division

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EXECUTIVE SUMMARY

In compliance with section 7 of the Endangered Species Act (ESA), the National Marine Fisheries Service (NMFS) has completed this biological opinion consulting on the authorization of groundfish fisheries in the Bering Sea and Aleutian Islands region (BSAI) under the Fishery Management Plan (FMP) for the BSAI Groundfish, and the authorization of groundfish fisheries in the Gulf of Alaska (GOA) under the FMP for Groundfish of the GOA. This opinion is comprehensive in scope and considers the fisheries and the overall management framework established by the respective FMPs to determine whether that framework contains necessary measures to ensure the protection of listed species and critical habitat. The opinion determines whether the BSAI or GOA groundfish fisheries, as implemented under the respective FMPs, jeopardize the continued existence of listed species in the areas affected by the fisheries (i.e., the action areas) or adversely modify critical habitat of such species.

Action Area

The action area consists of “all areas to be affected directly or indirectly by the Federal action, and not merely the immediate area involved in the action” (50 CFR 402.02(d)). As such, the action area for the Federally managed BSAI groundfish fisheries covers all of the Bering Sea under U.S. jurisdiction, extending southward to include the waters south of the Aleutian Islands west of 170°W longitude to the border of the U.S. Exclusive Economic Zone. The action area covered by the GOA FMP applies to the U.S. Exclusive Economic Zone of the North Pacific Ocean, exclusive of the Bering Sea, between the eastern Aleutian Islands at 170°W longitude and Dixon Entrance. The area encompasses sites that are directly affected by fishing, as well as sites likely to be indirectly affected by the removal of fish at nearby sites. The action area would also, necessarily, include those state waters that are encompassed by critical habitat for Steller sea lions.

The action area includes the Alaska range of both the endangered western and threatened eastern populations of the Steller sea lion. However, the effects of the Federal FMPs on Steller sea lions generally occur within the range of the western population. Therefore, this consultation focuses primarily on areas west of 144° W longitude (the defined boundary of the western population of Steller sea lions).

NMFS has determined that the action being considered in this biological opinion may affect 22 species listed under the ESA, including 7 species of endangered whales, the two distinct populations of Steller sea lions, twelve evolutionarily significant units (ESU) of Pacific salmonids and one species of endangered sea turtle. The action area also includes 4 species of endangered or threatened seabirds, and 1 species of marine mammal, the northern sea otter, that has been proposed as a candidate species under the ESA.

Environmental Baseline

The environmental baseline for the biological opinion must include the past and present impacts of all state, Federal or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone consultations, and the impact of contemporaneous State or private actions (50 CFR §402.02). The environmental baseline for this biological opinion includes the effects of a wide variety of human activities and natural phenomena that

may affect the survival and recovery of threatened and endangered species in the action area. The opinion recognizes that such phenomena and activities have contributed to the current status of populations of those listed species. While some may have occurred in the past but no longer affect these species, others may continue to affect populations of listed species in the study area.

The environmental baseline for this action includes fisheries and other FMP-associated activities that are occurring, and that have occurred prior to January 2000. Other human-related activities discussed that may affect, or have affected, the baseline include the impacts of human growth on the action area and the effects of commercial and subsistence harvests of marine mammals. Alaska managed commercial fisheries are also addressed. Those fisheries and their effects on listed species are expected to continue in the action area and into the future. Herring and salmon are fisheries that are managed entirely by the State of Alaska, or, in the case of pollock and Pacific cod, only a percentage of the fishery is managed by State authority, and are species found year-round in the diet of Steller sea lions.

The environmental baseline also discusses the potential effects of the environmental changes on the carrying capacity of the action area over the past several decades, including the relationship between the dietary needs of Steller sea lions, the regime shift hypothesis, and massive population declines in recent decades. The opinion concludes that it is highly unlikely that natural environmental change has been the sole underlying cause for the decline of Steller sea lions.

The environmental baseline attempts to bring together all of the estimated mortalities of Steller sea lions and a synthesis of the significance of those takes. The best available scientific information on the magnitude and likely impacts of Orca predation on listed species in the action area are analyzed. Other factors, such as disease, ecological effects of commercial whaling through the 1970s, and pollutants, while not entirely excluded as contributing factors, have been considered, but are given lesser importance in explaining the observed pattern of declines.

Effects of Actions

The scope of the “effects of actions” analysis is intended to be comprehensive. As such, the opinion is broad and examines a range of activities conducted pursuant to the FMPs including the manner in which the total allowable catch levels are set, the process that leads to the setting of these levels, the amount of prey biomass taken from sea lion critical habitat. The effects of other activities that are interrelated or interdependent are also analyzed. Indirect effects are those that are caused later in time, but are still reasonably certain to occur. Interrelated actions are those that are part of a larger action and depend upon the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration (50 CFR 402.02).

The first part of the effects analysis is a description of fishery management as practiced under the FMPs, including an explanation of how ecosystem issues are considered. Particularly important sources of potential ecosystem effects are highlighted in subsequent sections. The second part of the effects analysis focuses on the current exploitation strategy and its potential relevance, both past and present, in shaping changes in the abundance and population structure of groundfish stocks. The present fishery management regime’s maximum target fishing reference point of $B_{40\%}$ is used as an example to illustrate the potential direction and intensity of direct effects.

The third part of the effects analysis reviews the annual fishery cycle, from surveys through the establishment of Total Allowable Catch (TAC) levels. The effects are evaluated specific to the major

stages of the cycle and to explore whether effects can be compounded through subsequent steps in the cycle. Finally, in the fourth part of the effects analysis, the FMPs and their management tools and policies are examined as guiding documents for management of the fisheries and protection of the associated ecosystems. This part also addresses the fisheries as they are prosecuted under the FMPs.

Cumulative Effects

Cumulative effects include the effects of *future* State, tribal, local, or private actions that are reasonably certain to occur in the action area. The State groundfish fisheries are generally smaller than the federal groundfish fisheries but are expected to have marginally more impacts (because of location) on listed species with respect to competition for prey and long term ecosystem impacts. The crab fishery is one of the biggest fisheries managed by the state. However, this fishery is not likely to directly compete for prey with either Steller sea lions or other listed species. Herring, salmon, Pacific cod, pollock, squid, and octopus are items found year-round in the diet of Steller sea lions. Species such as salmon and herring occur much more frequently in the summer as determined by analyses of Steller sea lion prey habits from 1990-1998.

Perhaps the most important interaction between state fisheries and listed species may arise from the pattern of localized removals of spawners. Although the patterns are generally similar from one fishery to the next, the sheer number of distinct fisheries makes it difficult to describe them individually. Likewise, each fishery is distinctly different in either the number of boats, gear used, time of year, length of season, and fish species. Therefore, we present the herring fishery as an example of this type of interaction to demonstrate some of the competitive interactions that may occur.

The impacts of some of the State fisheries on Steller sea lions and, in some cases, humpback whales would be similar to those of the Federal fisheries: cascade effects and competition. Steller sea lions and some of the State fisheries actively demand a common resource and the fisheries reduce the availability of that common resource to Steller sea lions while they satisfy their demand for fish. The State groundfish fisheries may reduce the abundance or alter the distribution of several prey species of listed species.

After reviewing the current status of each listed species in the action area, the environmental baseline for the action area, the effects of the FMPs for Alaska Groundfish in the BSAI and GOA, and the cumulative effects of the federal action, NMFS has determined that the FMPs are not likely to jeopardize the continued existence of any listed species in the action area except for the endangered western population of Steller sea lions. In addition, after reviewing the current status of critical habitat that has been designated for Steller sea lions, the environmental baseline for the action area, the FMPs for Alaska Groundfish in the BSAI and GOA, and the cumulative effects, it is NMFS' biological opinion that the FMPs are likely to adversely modify this critical habitat designated for Steller sea lions.

Reasonable and Prudent Alternative

Based on the effects discussion and NMFS determination that fishing activity under the FMPs are likely to jeopardize the continued existence of the western population of Steller sea lions and are likely to adversely modify their designated critical habitat, NMFS has developed a reasonable and prudent alternative (RPA) with multiple components for the groundfish fisheries in the BSAI and GOA. The fisheries effects that give rise to these determinations include both large scale removals of Steller sea lion forage over time, and the potential for reduced availability of prey on the fishing grounds at scales of

importance to individual foraging Steller sea lions.

The first RPA element addresses the harvest strategy for fish removal at the global or FMP level. This RPA requires the adoption of a new harvest control rule that would decrease the likelihood that the fished biomass for pollock, Pacific cod and Atka mackerel would drop below $B_{40\%}$. ***The global control rule is a revised, more precautionary fishing strategy ($F_{40\%}$ adjustment procedure) for principal prey of Steller sea lions taken by the groundfish fisheries in the BSAI and GOA (pollock, Pacific cod and Atka mackerel) than that which currently exists under the FMP.*** The effect of using the global control rule is increased likelihood that the stock is maintained at or above the target stock size by reducing the exploitation rate at low stock sizes.

Other RPA elements completely protect sea lions from groundfish fisheries at global and regional scales, and in both temporal and spatial dimensions. The other RPA elements reflect a hierarchy of NMFS concerns about the effects of the groundfish fisheries on Steller sea lions. Those concerns are greatest with respect to critical habitat areas around rookeries and major haulouts, and in special foraging areas designated as critical habitat, and less for areas outside of critical habitat where take levels are not considered to be at a level that would jeopardize Steller sea lions. ***Significant interactions between sea lions and the fisheries for pollock, Pacific cod and Atka mackerel have been eliminated in critical habitat between November 1 and January 19, or 22% of the year.*** This level of partitioning is necessary in this period because sea lions at this time are considered extremely sensitive to prey availability. Because fisheries are restricted to the remaining 78% of the year, dispersive actions taken at finer temporal and spatial scales are also necessary to avoid jeopardy and adverse modification. ***The RPA extends 3 nautical mile (nm) protective zones around rookeries to all haulouts. In the GOA, EBS and AI, a total of 139 no-fishing zones (note: the rookeries are already no-entry zones) are established that will partition all pups and non-pups from disturbances associated with vessel traffic and fishing in close proximity to important terrestrial breeding and resting habitat. The RPA closes many rookeries and haulouts out to 20 nm to directed fishing for pollock, Pacific cod and Atka mackerel.*** This second spatial partitioning element excludes all fisheries for pollock, Pacific cod, and Atka mackerel from approximately 63% of critical habitat in the GOA, EBS, and Aleutian Islands. These measures significantly increase the amount of critical habitat protected from directed fishing for Steller sea lion prey, greatly reduces the number of potential takes of Steller sea lions through competition for a prey base inside critical habitat, completely protects all pups and non-pups on rookeries and haulouts out to 3 nm from the effects of fishing activity, and greatly reduces the interactions between fisheries and sea lions during winter months.

Fisheries occurring in the remaining 34% of critical habitat and the areas outside critical habitat require further dispersive actions to avoid jeopardy and adverse modification. The temporal concentration of fisheries for pollock, Pacific cod and Atka mackerel may result in high local harvest rates that may reduce the quality of habitat by modifying prey availability. The RPA establishes the following measures to disperse fishing effort at regional and local scales and to reduce the effects of groundfish fisheries on prey availability for sea lions to negligible or background levels.

The RPA separates the fisheries into four seasonal limits inside critical habitat, and two seasonal releases outside of critical habitat, and disperses fishing effort throughout the open portion of the year, January 20-October 31. Season start dates are spaced evenly throughout this period and portions of the TAC is allocated to each season. These actions reduce the proportion of pollock, Pacific cod and Atka mackerel taken inside critical habitat inside the GOA to less than 20% of the total catch. The measure also protects against excessive harvest rates that may rapidly deplete concentrations of prey inside critical

habitat. NMFS has concluded that a temporally dispersed fishery would not significantly harm the foraging success of Steller sea lions as the take would be reduced to a level that NMFS believes would not compromise them.

The spatial concentration of current fishing effort for pollock, Pacific cod and Atka mackerel may result in high local harvest rates that reduce the quality of habitat for foraging Steller sea lions. Fishing inside critical habitat may result in takes of Steller sea lions through adverse modification of habitat (i.e., prey availability). ***Therefore, this RPA reduces the percentage of pollock taken inside critical habitat from 80 to 42% in the GOA, from 45 to 14% in the EBS and from 74 to 2% in the AI compared to 1998. It also reduces the percentage of Pacific cod caught in critical habitat from 48 to 21% in the GOA, from 39 to 17% in the EBS and from 79 to 17% in the AI as compared to 1998. The RPA reduces the percentage of Atka mackerel caught inside critical habitat in the AI from 66 to 8 % as compared to 1998.***

Finally, the RPA is designed to close adequate portions of critical habitat to commercial fishing for the three primary prey species of groundfish, while imposing restrictions on fishing operations in areas open to fishing to avoid local depletion of prey resources for Steller sea lions. This approach of creating areas open and closed to fishing operations provides contrast between complete closures and restricting fishing areas within critical habitat and forms the basis for monitoring the RPA. Over the past decade the North Pacific Fisheries Management Council has noted the importance of assessing the efficacy of conservation measures intended to promote the recovery of the western population of Steller sea lions. To this end, NMFS has incorporated into its RPA a monitoring program that will allow for such an evaluation.

Incidental Take Statement and Conservation Recommendations

An Incidental Take Statement (ITS) specifies the impact of any incidental taking of endangered or threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which NMFS must comply in order to implement the reasonable and prudent measures and to be exempt from the prohibitions of section 9 of the ESA.

In addition to the RPA and ITS, conservation recommendations have been provided within this biological opinion. An example of one of the conservation recommendations that NMFS believes should be implemented is a more comprehensive stock assessment that would provide detailed information on groundfish stocks on spatial and temporal scales and to provide timely review of possible fishery interactions with listed species (and in the future on essential fish habitat). This would allow for better analysis of the possible impacts of target fisheries on listed species and the more proactive development of time/space harvest recommendations at the individual stock assessment level so that fishery interactions with listed species and essential fish habitat can be minimized.

The cumulative effect of the RPA elements contained in this biological opinion successfully removes jeopardy and avoid adverse modification of designated critical habitat. However, the State fisheries in Alaska, particularly those involving salmon, herring, and Pacific cod are likely to result in take of Steller sea lions and may require modification. As a conservation measure, NMFS also recommends that the State of Alaska request NMFS to assist in the development of a Habitat Conservation Plan (as authorized under section 10 of the ESA). This plan should be designed to mitigate adverse impacts on Steller sea lions and other listed species that might accrue from State managed fisheries. This plan should employ the same standards and principles as used in this biological opinion to prevent completion and minimize take between fisheries and listed species.

Conclusion

After analyzing the cumulative, direct and indirect effects of the Alaska groundfish fisheries on listed species, NMFS concludes that the fisheries do not jeopardize any listed species other than Steller sea lions. The biological opinion concludes that the fisheries do jeopardize Steller sea lions and adversely modify their critical habitat due to competition for prey and modification of their prey field. The three main species with which Steller sea lions compete for prey are pollock, Pacific cod, and Atka mackerel. The biological opinion provides a reasonable and prudent alternative to modify the fisheries in a way that avoids jeopardy and adverse modification.